

## **Ph. D. in Industrial & Systems Engineering Program Requirements**

### **1. Admission to the Doctor of Philosophy Program in Industrial & Systems Engineering**

To apply for admission to the Ph.D. in Industrial & Systems Engineering, applicants should submit an application and its supporting documents on the online application portal through the Graduate School's website (<http://www.ncat.edu/tgc/admissions/how-to-apply.html>). It is strongly recommended that all required documents be received on or before the Graduate School's priority deadlines (February 1 for fall admissions and September 1 for spring admissions). The Department will evaluate applications within approximately 14 days of their receipt from the Graduate School.

To be considered for admission to the Ph.D. in Industrial & Systems Engineering an applicant must have:

1. At least one degree in Engineering or Computer Science.
2. A Bachelor of Science degree in Engineering or Computer Science from an EAC-ABET accredited program with a cumulative Credit Point Average of 3.5 or above on a 4-point scale.

OR

A Master of Science degree in a discipline related to Industrial & Systems Engineering, from a college or university recognized by a regional or general accrediting agency, with a cumulative Grade Point Average of 3.3 or above on a 4-point scale.

3. Graduate Record Exam (GRE) Aptitude Exam scores.
4. Evidence of English language proficiency for international applicants. Normally, an acceptable score on TOEFL, IELTS, or PTE test is required if the highest degree is from non-English speaking country. The official TOEFL score (at least 80 or higher internet-based score), or IELTS score (6.5 or higher effective July 1 2016), or PTE Academic score (53 or higher). These scores are reportable for a period of two years from the date of the exam.

### **2. Curriculum Requirements**

A total of 69 credits after the B.S. degree, of which 18 credits are toward dissertation work, and 51 credits are toward course work. Of the 51 credits of course work, up to 24 credits of Industrial & Systems Engineering-related course work at the MS-level may be applied towards the 51 course credit requirements. Specifically, the student must complete the following credit hour requirements:

Total credit hours: 69 (post baccalaureate)

- Take 12 credit Core courses: ISEN 625: Information Systems, ISEN 655: Production Planning & Scheduling, ISEN 665: Human Machine Systems, ISEN 675: Design and Analysis of Experiments

- Select 12 credits from ISEN 721: Systems Engineering Models, ISEN 812: Advanced Ergonomics, ISEN 813: Cognitive Systems Engineering, ISEN 814: Advanced Topics in Human-Machine Systems, ISEN 821: Multivariate Statistics for Engineers or ISEN 833: Supply Chain Systems Engineering, ISEN 841: Integer and Network Optimization, ISEN 852: Integrated Manufacturing Control Systems, ISEN 853: Enterprise Integration
- Take 12 credits of additional graduate level ISEN courses
- Take 12 credits of additional engineering courses at 700 or 800 level
- At least 21 course credits should be at 800 level
- ISEN Seminar (3 credits): Take ISEN 992: Doctoral Seminar in ISE three times in three semesters
- Pass qualifying exam, preliminary exam
- Dissertation (18 credits): ISEN 997: Doctoral Dissertation